

Binoculars Range  
Autumn / Winter 2004

**Canon**

advanced simplicity™



## BRING THE WORLD CLOSER TO YOU

Whether you want to use your binoculars for travelling, bird watching, sailing, hunting, hiking or to watch sports and nature, Canon will bring the world closer to you.

With the broad range of high-performance binoculars that Canon has to offer, you can find a pair of binoculars that best suits your needs. Each model is designed to deliver the highest standards of optical and mechanical performance.

As a world leader in lens and optical technology, you can be assured that Canon binoculars will deliver outstanding image quality.

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# CANON BINOCULARS TECHNOLOGY

Canon binoculars incorporate computer-assisted lens design from Canon's renowned EF lenses to ensure superior quality across the entire range. This quality is further enhanced with the addition of Image Stabilizer technology, adapted from Canon's industry-leading video cameras.

## IMAGE STABILIZER

The more powerful the binoculars, the more minor vibrations are magnified. As a result, even a slight shaking of your hands will shake the image in the binoculars dramatically. Normally, we can tolerate this image shake with binoculars up to 7x magnification. With higher magnification binoculars, the image shake quickly becomes intolerable and a tripod is necessary. However, with Canon's Image Stabilizer turned on, image shake is eliminated even at magnifications of 15x and 18x. The Image Stabilizer steadies the image instantaneously to bring out the optimum performance of the lenses.



Without Stabilizer

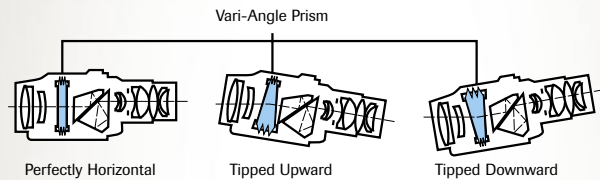


With Image Stabilizer

## HOW DOES IT WORK?

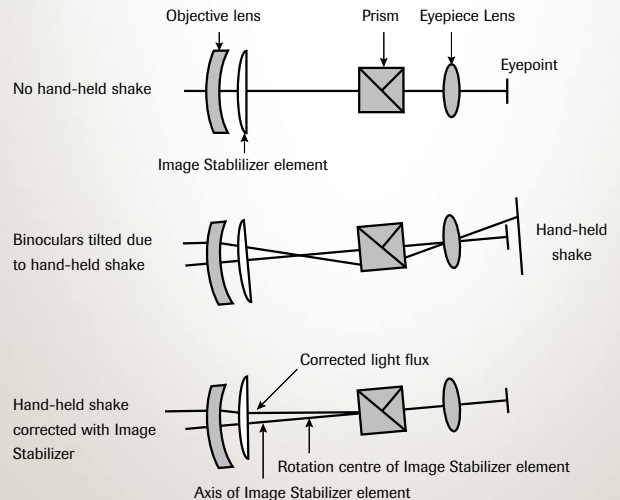
The Image Stabilizer suppresses image shake so that the image looks steady to the eye. When the IS is engaged, vertical and horizontal gyros detect motion in any direction. The amount of shake is calculated by a microcomputer and the shake is optimally counteracted by either a set of Vari-Angle Prisms (VAP) or a Tilt mechanism. In effect, the light's refraction is altered so that the image always looks steady to the eye. This revolutionary system instantly and continuously makes adjustments to maintain a steady image.

### Optical Image Stabilizer System



## VARI-ANGLE PRISM (VAP)

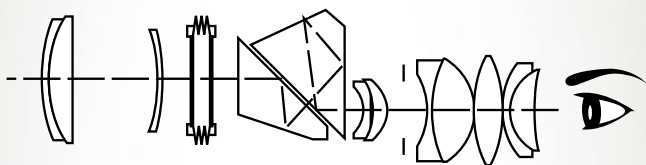
Two sensors detect horizontal and vertical shaking respectively. The two Vari-Angle Prisms in both the left and right telescopes are controlled by a microprocessor to instantly adjust refraction angle of the incoming light, producing shake-free images.



## DOUBLE FIELD FLATTENER

The IS (Image Stabilizer) series feature eyepiece lenses with unique Double Field Flattener, which dramatically reduces the curvature of field. As a result, there is none of the image distortion and blurring at the periphery, typical of high-magnification binoculars. This advanced design also enables eyeglass wearers to view the entire field without vignetting.

Double Field Flattener



Without Double Field Flattener



With Double Field Flattener

## ASPHERICAL ELEMENTS

Lenses are generally constructed of several single lens elements. These have spherical surfaces, which make it especially difficult to correct spherical aberration and distortion. Canon uses a special aspherical lens element to correct these aberrations. These elements have a free-curved surface which is not spherical, and produce sharp, distortion-free images.

## SUPER SPECTRA COATING

When light enters and exits a lens, approximately 5% of the light is reflected back. This not only reduces the amount of light passing through the lens but also leads to unwanted flare or ghost images. To prevent this reflection Canon applies a special coating to each element in its binoculars called Super Spectra Coating. This provides the overall lens system with optimum colour characteristics and assists in producing sharp, high-contrast images.

## 18 x 50 – WHAT DOES IT MEAN?

Binoculars models are generally described by two numbers separated by an “x”. The first number refers to the magnification or power of the binoculars. It tells you how much larger, or closer, an image will appear. The higher the number, the closer it will appear. The second number is the diameter (in millimetres) of the objective (front) lens. The larger the number, the more light the binoculars gather, and the brighter the image will appear.



General Use



Travel



Bird Watching



Theatre



Spectator Sports



Camping/Hiking



Astronomy



Marine Activity



Business



Surveillance



**WIDE-ANGLE VIEW** Binoculars with an apparent field-of-view greater than 65° offering a broader scope of view.



**RUBBER COATING** Cushions the binoculars against shocks and makes them easier to grip.



**DOUBLE FIELD FLATTENER** A double lens group that compensates for curvature of field, ensuring excellent image flatness and clarity.



**OPTICAL IMAGE STABILIZER** A computer-controlled Vari-Angle Prism (VAP) system that compensates for movement to provide a clearer view.



**ASPHERICAL LENS** A non-spherical lens element that helps to reduce chromatic and other lens aberrations.



**LONG EYE-RELIEF** Allows users who wear glasses to see the entire image.



**WATERPROOF** Will survive submersion up to one metre underwater for five minutes. Not suitable for prolonged underwater use.



**WEATHERPROOF** Can be used in rain or snow and rinsed in running water to remove mud and dirt.



**PORRO PRISM** A combination of right-angle prisms that ensures the image is the right way up for viewing. The use of prisms also shortens the distance between the objective and eyepiece lenses, reducing the size and weight of the binoculars.



**ROOF PRISM** Performs a similar function to the Porro prism, but can be fitted in a straight barrel for a streamlined appearance.



**SUPER SPECTRA MULTICOATING** Extremely thin layers of chemicals applied to the surfaces of selected lenses and prisms to reduce unwanted reflections. This improves image sharpness, contrast and colour balance.

## BINOCULARS RANGE



### 18 x 50 IS



The high-magnification weather-resistant binoculars with built-in Image Stabilizer. Designed for professionals and uncompromising enthusiasts, these high-magnification binoculars incorporate innovative technologies that set a new standard of performance.

- High magnification of 18x ■ Large diameter 50mm objective lens for a bright field-of-view ■ Wide field-of-view of 67°
- Long eye-relief of 15mm ■ Image Stabilizer ■ UD element to reduce chromatic lens aberrations ■ Suitable for use in all weather conditions, including rain and ocean spray





## 15x50 IS



The high-magnification weather-resistant binoculars with built-in Image Stabilizer. Designed for professionals and uncompromising enthusiasts, these high-magnification binoculars incorporate innovative technologies that set a new standard of performance.

- High magnification of 15x ■ Large diameter 50mm objective lens for a bright field-of-view ■ Wide field-of-view of 67° ■ Long eye-relief of 15mm ■ Image Stabilizer ■ UD element to reduce chromatic lens aberrations ■ Suitable for use in all weather conditions, including rain and ocean spray



## 12x36 IS II



High power 12x binoculars with built-in Image Stabilizer.

- High magnification of 12x ■ Field-of-view of 60° ■ Long eye-relief of 14.5mm ■ Image Stabilizer ■ Double Field Flattener lens for improved edge sharpness ■ High resolving power



## 10x30 IS



Lightweight and powerful 10x Image Stabilizer binoculars.

- Magnification of 10x ■ Field-of-view of 60°
- Long eye-relief of 14.5mm ■ Image Stabilizer
- Double Field Flattener lens for improved edge sharpness



## 8x25 IS



World's smallest and lightest Image Stabilizer binoculars.

- Compact, lightweight and easy-to-use ■ Magnification of 8x
- Tilt Mechanism Image Stabilizer ■ Battery allows six hours of continuous operation ■ Environmentally friendly lead-free glass
- Field Flattener lens





## 8 x 32 WP



**Compact and waterproof 8x binoculars for the great outdoors.**

- Magnification of 8x ■ Field-of-view of 60°
- Long eye-relief of 18mm ■ Waterproof to 1m for five minutes
- Field Flatteners for improved edge sharpness ■ Lead-free glass



## 10 x 25 A



**Ultra-compact high-magnification 10x binoculars offering great portability.**

- Magnification of 10x ■ Field-of-view of 52°
- Ultra compact and lightweight ■ Lead-free glass
- Aspherical lens element to reduce spherical lens aberrations



## 8 x 22 A



**Lightweight folding design for easy handling and storage; excellent edge-to-edge sharpness and contrast.**

- Magnification of 8x ■ Field-of-view of 51°
- Aspherical lens element to reduce spherical lens aberrations
- Folding body for easy carrying ■ Lead-free glass



## 8 x 23 A



**Waterproof with compact design; optical system uses aspherical lens for edge-to-edge sharpness.**

- Magnification of 8x ■ Field-of-view of 51°
- Aspherical lens element to reduce spherical lens aberrations
- Lead-free glass ■ Compact and lightweight





	<b>18x50 IS</b>	<b>15x50 IS</b>	<b>12x36 IS II</b>	<b>10x30 IS</b>	<b>8x25 IS</b>	<b>8x32 WP</b>	<b>10x25 A</b>	<b>8x22 A</b>	<b>8x23 A</b>
	Ultra-high magnification weather-resistant 18x binoculars with built-in Image Stabilizer	High-magnification weather-resistant 15x binoculars with built-in Image Stabilizer	High-power 12x binoculars with built-in Image Stabilizer	Lightweight and powerful 10x Image Stabilizer binoculars	World's smallest and lightest Image Stabilizer binoculars	Compact and waterproof 8x binoculars for the great outdoors	Ultra-compact high-magnification 10x binoculars offering great portability	Ultra-compact high-magnification 8x binoculars offering great portability	Compact and lightweight general purpose 8x binoculars

<b>Magnification (x)</b>	18	15	12	10	8	8	10	8	8
<b>Objective Diameter (mm)</b>	50	50	36	30	25	32	25	22	23
<b>Exit Pupil (mm)</b>	2.8	3.3	3	3	3.1	4	2.5	2.8	2.9
<b>Relative Brightness</b>	7.8	10.9	9	9	9.6	16	6.3	7.6	8.3
<b>Real Field-of-View</b>	3.7°	4.5°	5.0°	6.0°	6.6°	7.5°	5.2°	6.4°	6.4°
<b>Apparent Field-of-View</b>	67°	67°	60°	60°	52.8°	60°	52.0°	51.2°	51.2°
<b>Field-of-View at 1000m (m)</b>	65	79	87.5	105	115	131	105	113	113
<b>Closest Focusing Distance (m)</b>	±6	±6	±6	±4.2	±3.5	±6	±3	±3	±3
<b>Eye-Relief (mm)</b>	15	15	14.5	14.5	13.5	18	11	11	11
<b>Prism</b>	Porro Prism II	Porro Prism II	Porro Prism	Porro Prism	Porro Prism II	Roof Prism	Roof Prism	Roof Prism	Porro Prism
<b>Eyepiece Lens Movement</b>	No	No	No	No	No	Yes	No	No	No
<b>Objective Lens Movement</b>	No	No	Yes	Yes	No	No	Yes	Yes	Yes
<b>Image Stabilizer</b>	Yes	Yes	Yes	Yes	Yes	No	No	No	No
<b>Field Flatteners Lens</b>	Double Field Flatteners	Double Field Flatteners	Double Field Flatteners	Double Field Flatteners	Double Field Flatteners	Single Field Flatteners	No	No	No
<b>Aspherical Lens</b>	No	No	No	No	No	No	Yes	Yes	Yes
<b>UD Lens</b>	Yes	Yes	No	No	No	No	No	No	No
<b>Power Source</b>	2 x AA alkaline	2 x AA alkaline	2 x AA alkaline	2 x AA alkaline	CR123A	n/a	n/a	n/a	n/a
<b>Rubber Coating</b>	Yes	Yes	No	No	No	Yes	No	No	No
<b>Water Resistance</b>	☹	☹	No	No	No	☹☹	No	No	No
<b>Super Spectra Multicoating</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Weight (excluding batteries)</b>	1,200g	1,200g	660g	600g	490g	730g	310g	300g	250g
<b>Dimensions W x H x D (mm)</b>	152 x 193 x 81	152 x 193 x 81	127 x 174 x 70	127 x 70 x 150	120 x 138 x 61	54.5 x 136 x 145	44 x 66 x 107	66 x 107 x 54	104 x 100 x 48

☹ All Weather - Usable in heavy rain.

☹☹ Waterproof 1 metre underwater for 5 minutes. Not for use under water. JIS Level 4/IEC Level 4 standards.

<b>Accessories</b>	<b>18x50 IS</b>	<b>15x50 IS</b>	<b>12x36 IS II</b>	<b>10x30 IS</b>
Battery Pack BP-B1	■	■	■	■
Anti-Fog Eyepiece AE-B1	■	■		

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# GLOSSARY / TECHNICAL GUIDE

## ASPHERICAL LENS

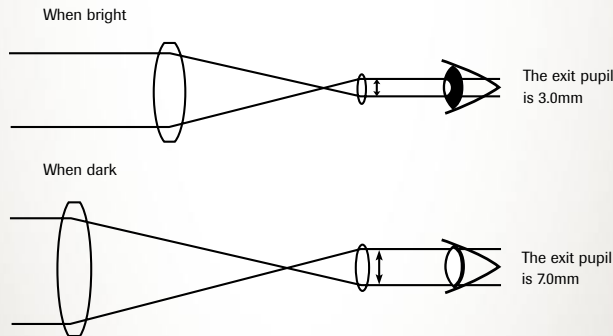
Aspherical lens eliminates image distortion and reduces field curvature to negligible levels, enabling clear, crisp images up to the periphery of the viewing field.

## DIOPTRER ADJUSTMENT

A “fine focus” adjustment ring usually provided around one eyepiece to accommodate for vision differences between the right and left eye.

## EXIT PUPIL DIAMETER

This is the diameter of the shaft of light coming from the binoculars to the eye. Its size is calculated by dividing the objective lens diameter by the magnification. This number when squared, produces the relative brightness index (-> twilight factor). A larger exit pupil diameter is generally more desirable, as the wider the shaft of light, the brighter the image because the light is hitting more of our retina.



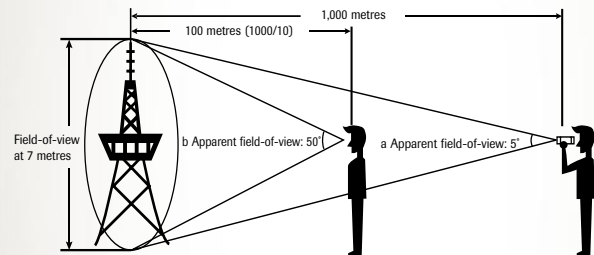
## EYE-RELIEF

Eye-relief is the distance between the eyepiece lenses and the eyepoint at the time of focusing, or the distance the binoculars can be held away from the eye and still present the full field-of-view. Extended or long eye-relief allows the user to see the entire field-of-view and

reduces eyestrain – ideal for eyeglass wearers. Canon Binoculars have fold down rubber eyecups that allow you to bring your binoculars in close to your eyes.

## FIELD-OF-VIEW

Real field-of-view is the width of the area that you can see through the binoculars, or how much of the scene you will be able to see (also referred to as the angle-of-view). If the field-of-view is 150m at 1000m, this means what you see in the viewfinder spans a width 150m when viewing a scene from a distance of a kilometre. Wide-angle binoculars feature a wide field-of-view and are better for following action. As a general rule the size of the field-of-view will decrease as magnification increases.



Apparent field-of-view is the value of the real field-of-view multiplied by the magnification. This value represents the field-of-view you see looking through the binoculars. It is comparable even among binoculars of different magnification. The Japanese Industrial Standard (JIS) defines binoculars with an apparent field-of-view greater than 65° as wide field-of-view types.

## MAGNIFICATION

Magnification is the first number quoted in the binoculars' model designation. With a 10x magnification, the object being viewed appears to be 10 times closer than you would see it with the unaided eye. An object that is 800 metres away will appear as though it is only 80 metres from you.

## OBJECTIVE LENS DIAMETER

This is the second number quoted in the binoculars' model designation. It indicates the diameter, in millimetres, of the front (or objective) lens (also referred to as aperture). The larger the objective lens, the more light enters the binoculars, and the brighter the image, which provides greater detail and a clearer image.

## OPTICAL COATINGS

When a thin layer of anti-reflection coating is applied to a glass surface it reduces light loss (increasing the amount of light that actually reaches the eye). The more complete and complex the coating scheme, the higher the binoculars' light transmittance. Better coatings allow more light to reach the eye, improving brightness and overall optical performance. Multi-coated optics means that all air-to-glass surfaces are treated with the time-proven multi-layer coating, which improves light transmission efficiency. This means you'll enjoy bright, high-contrast images without flare as well as reduced eye fatigue.

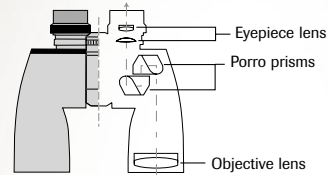
Canon's multi-layer coating prevents the loss of light caused by reflection on a lens surface, offering a brighter, much clearer view.

## OPTICAL SYSTEMS

Light enters the objective lenses and travels via prisms to the eyepieces. The two most commonly used prism systems are Porro prism and Roof prism that result in two basic designs (see Porro prism and Roof prism). The purpose of prisms is to correct the inverted and reversed images you would see in their absence.

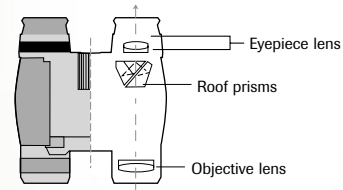
## PORRO PRISM

This is the classic design with a distinctive "Z" shape or offset design. It is characterised internally by a combination of two right-angle Porro prisms and externally by the offset positioning of the eyepieces from the objective lenses. They usually provide greater depth perception for a more lifelike, 3D image and wider field-of-view.



## ROOF PRISM

With the prisms positioned one over the other, the objective lenses and the eyepieces are in line. The result is a more compact slimline design which allows compact binoculars to have full size power capabilities.



## TWILIGHT FACTOR

During daylight hours, the magnification of the binoculars will be the principal factor in image resolution. At night, when the eye pupil is dilated, aperture (objective diameter) size is the controlling factor. In twilight conditions, both of these factors affect resolution. A higher twilight factor indicates that the binoculars will resolve images better under dim light conditions. The twilight factor is calculated by multiplying the magnification by the aperture and taking the square root of this product. The twilight factor will primarily indicate performance at dawn or dusk without consideration of the light transmittance or glass quality of the binoculars.



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